Joint Service Safety Conference

DoDI 6055.7/PWG DECISION BRIEF 28 JULY 2004

Kimball Thompson, Chairman
Naval Safety Center

DoDI 6055.7/PWG Issues

- Human Factors Information Sharing
- UAV Mishap Rate
- Engine-confined FOD Mishaps
- Engine-confined Mishaps/Events
- Aircraft Rate-producing Mishaps

DoDI 6055.7/PWG

Human Factors Information Sharing

- PWG input from the HFWG Chair
- E4.2. GENERAL
- The DoD Components shall:
  - E4.2.1. Adopt the accident categories, classification criteria, human error categorization system, and reporting formats and procedures contained in this Instruction. This does not prevent the DoD Components from collecting, classifying, and maintaining additional data for their individual accident prevention needs.
  - E4.2.X. Establish procedures to provide for the cross-feed of human error data using a common human error categorization system that involves human factors taxonomy accepted among the DoD Components and U.S. Coast Guard.

Joint Service Safety Conference

DoDI 6055.7/PWG Human Factors Information Sharing

- E4.15. CROSS-FEED OF ACCIDENT DATA
  - E4.15.1.1. Shall provide for the cross-feed of accident data that involves like equipment or similar operations among the DoD Components and U.S. Coast Guard. That cross-feed shall include applicable information about equipment safety modifications, human performance threats, hazards and human error.

DoDI 6055.7/PWG Recommendation

- Adopt cross-feed of human factors data as recommended by Human Factors Working Group

DoDI 6055.7/PWG Tasking

- Examine current DoDI guidance with regards to rate producing mishaps
- Make recommendation for inclusion of …
  - UAV mishaps
  - FOD & engine-confined mishaps/events
  - All aircraft mishap subcategories

Joint Service Safety Conference

DoDI 6055.7/PWG

UAV Mishap Rate

- Add an overall UAV rate
  - Select reportable UAVs mishaps based $$$
  - (Flight + Flight Related? + Ground Ops?) / 100K hours
  - Confirm feasibility with UAV operators
- Pros
  - Provides a UAV rate for comparison / mishap prevention
  - UAVs will be with us for a long time / many too expensive to throw away
  - Separate UAV rate will show true cost of UAV mishaps
- Cons
  - Hard to collect UAV flight hours today

DoDI 6055.7/PWG Recommendation

- Conduct further research with UAV operators
- Establish requirement for UAV Flight rates in DoDI 6055.7
  - E2.1.41. (Added) UAV Mishap Rate. Number of recordable mishaps per units of exposure; e.g. UAV mishaps per 100,000 flying hours. Rates shall be collected on UAVs valued above $XXXX.00.

Joint Service Safety Conference

DoDI 6055.7/PWG Engine-Confined/FOD

- Should mishap definition include
  - Engine-confined mishaps/events
  - Engine-confined FOD mishaps

Joint Service Safety Conference

DoDI 6055.7/PWG

Current Service Views

Service	*Engine-Confined*	*Engine-Confined FOD*
USA	No	No, Class F regardless of $$$
USAF	Yes	Yes
USN	No	Yes
USMC	No	Yes

DoDI 6055.7/PWG Engine-Confined Issues

- Interpretation of DoDI 6055.7, para E4.9.4, *Non-Reportable Accidents / Events*
  - Normal wear and tear on component parts
  - Only for items normally used until they fail or until predetermined wear limits are reached
- Interpretation of DoDI 6055.7, para E2.1.7
  - “Accident as an unplanned event or series of events, that results in damage to DoD property”

Joint Service Safety Conference

DoDI 6055.7/PWG

Option 1 – Engine Confined Issue

- Make engine-confined mishaps a separate DoD class
  - Engines are a key driver of mishaps
    - FY94-03…18% of Class A mishaps, 18% of destroyed aircraft, 17% of cost
  - DoDs #1 material failure mishap type
  - Justified a separate JSAT effort
- Pros
  - Segregates engine-confined mishap costs
  - Standardizes DoD mishap rates accounting
- Cons
  - Could isolate engines from senior leader attention - If not in the Class A rate, may not get attention appropriate elevation

DoDI 6055.7/PWG

Option 2 – Engine Confined Issue

- Make engine-confined mishaps/events non-reportable
- Pros
  - Majority joint view - USN, USMC, and USA
  - Standardizes DoD mishap rates accounting
  - Individual services can still investigate engines / prioritize funding to meet their individual needs
- Cons
  - Gives the impression that engine-confined mishaps/events are too hard to fix/non-preventable
  - Limits visibility of events and cost

Joint Service Safety Conference

DoDI 6055.7/PWG

Option 3 – Engine Confined Issue

- Require all services to report engine-confined mishaps/events
- Pros
  - Sets a single standard for mishap reporting
  - Allows senior leadership visibility into all major mishap drivers
  - Highlights importance of engine safety as JSF enters inventory
- Cons
  - Increases mishap rates for some services

Joint Service Safety Conference

DoDI 6055.7/PWG Recommendation

- To promote standardization of DoD mishap rate reporting make engine-confined non-FOD events non-reportable in DoDI 6055.7

- Clarify DoDI 6055.7, para E4.9.4.

  Replacement of component parts due to normal wear and tear, and when any associated damage is confined to the component part. This includes engine-confined non-FOD events. This exemption only applies to items that are normally used until they fail or until predetermined wear / inspection limits are reached. Replacement need not be evident until malfunction or failure of the part.

Joint Service Safety Conference

DoDI 6055.7/PWG FOD Mishaps

- DoDI 6055.7 defines FOD accident
  - Non-reportable, if discovered during scheduled engine disassembly
- USAF, USN, and USMC view
  - Engine-confined FOD mishaps are investigated and classified by dollars into Class A, B, or C
- USA view
  - Engine-confined FOD mishaps are classified as a Class F mishap regardless of cost

DoDI 6055.7/PWG Recommendation

- All services report FOD mishaps in the appropriate Class A, B, or C dollar damage class IAW DoDI
  - Eliminate separate engine-confined FOD Classes
  - E4.9.15. [NON-REPORTABLE ACCIDENTS/EVENTS] Foreign object damage to aircraft, air-breathing missiles, or drone / UAV engines during scheduled engine disassembly. Report all other FOD mishaps in the appropriate A, B, or C classification determined by mishap costs.

Joint Service Safety Conference

DoDI 6055.7/PWG

DoD Rate Comparisons FY 94-03

FY 94-03 DoD	Aircraft Flight	Aircraft Ground Ops	Aircraft Flight Related	Overall Aircraft	UAV
Total (%)	745 (93%)	42 (5%)	11 (2%)	798 (100%)	43 841 (5%)
Rates	1.56	0.09	0.02	1.67	UNK but possible to compute

DoDI 6055.7/PWG

Option 1 - Aircraft Flight Rate

- What we are doing now (status quo)
  - Pros
    - Maintains best consistency in historical data – little change since 1989
    - Captures 93% of DoD aircraft mishaps (Gnd Ops / Flt Related = 7%)
      - USAF 80%, USA 94%, USN/USMC 96%
    - Widespread understanding of current rules
  - Cons
    - Doesn’t capture overall / entire safety performance in one rate
    - Excludes Flight Related and Ground Ops mishaps

DoDI 6055.7/PWG

Option 2- Overall Aircraft Rate

- Overall Aircraft rate
  - (Flight + Flight Related + Ground Ops) / 100K hours
- Pros
  - Includes all mishaps associated with generating flight hours
  - Complete picture of overall aircraft safety performance
  - Eliminates perception of “hiding” mishaps
- Cons
  - Historical data adjustment for consistent comparisons
  - Yields little change to conclusions from current methodology
    - Main drivers are CFIT, Powerplant, Midair Collisions, and Loss of Control

DoDI 6055.7/PWG

An Option – Fatality and Destroyed Aircraft Rates

- All Fatalities per 100K hours (FM, FRM, AGM)
- Destroyed aircraft per 100K hours (FM, FRM, AGM)
- Dollars per 100K hours (FM, FRM, AGM)

Joint Service Safety Conference

DoDI 6055.7/PWG Recommendation

- Continue to use Aircraft Flight rates for DoD reporting and primary mishap safety performance rate
  - Serves DoD top mishap prevention strategies targeted at driving down rates
    - CFIT, Propulsion, Mid-Air Collisions, Loss of Control
  - Individual services can still report other rates for their unique mishap prevention programs
    - Ground ops rate / Flight Related rate / Flight Rate/Overall Aircraft rate

Joint Service Safety Conference

DoDI 6055.7/PWG Recommendation?

- Do Service Safety Chiefs want to add an Aircraft Destroyed Rate, Fatality Rate or Dollar Rate?

Joint Service Safety Conference

DoDI 6055.7/PWG Recommendations

- Provide for the cross-feed of human error data using a common human error categorization system
- Add UAV Mishap Rate
- Continue to use Aircraft Flight rates for DoD reporting and primary mishap safety performance rate
- Make engine-confined non-FOD events non-reportable in DoDI 6055.7
- Report all other FOD mishaps in the appropriate A, B, or C classification determined by mishap

DoDI 6055.7/PWG Decisions

(1) Add Human Factors sharing to DoDI 6055.7?

(2) Add a UAV reporting category?

(3) Continue using Flight Rates as DoD reporting criteria?

(4) Fatalities, destroyed aircraft, dollars per 100K hrs?

(5) Engine-confined non-FOD events non-reportable?

(6) Report FOD mishaps as Class A, B, and C in FM and AGM categories?